**Mission 1**

**Red, green, and gecko**

Chart Cladogram

|  |  |  |  |
| --- | --- | --- | --- |
|  | Cells w/ nuclei | Heterotrophs | Photosynthetic  Autotrophs |
| Palm Tree |  |  |  |
| Gecko |  |  |  |
| Fly Agaric |  |  |  |
| # Shared Traits |  |  |  |

Q: Now that you’ve completed the first puzzle, answer the question: Is an animal or a plant more closely related to a fungus? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

## Familiar faces

Cladogram

|  |  |  |  |
| --- | --- | --- | --- |
|  | Bilateral symmetry | Vertebrate | Amniotes |
| Goldfish |  |  |  |
| Dog |  |  |  |
| King snake |  |  |  |
| Sick Insect |  |  |  |
| # Shared Traits |  |  |  |

Q - The animals in this puzzle look very different but they all have one thing in common. What trait is that?

Q – Which species is most closely related to dog?

## Tree of life: Vegetarian edition

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Photosynthetic  Autotrophs | Produces flowers | Release spore into water | Petals in multiples of 3 | Petals in multiples of 4 or 5 |
| Banana |  |  |  |  |  |
| Onion |  |  |  |  |  |
| Radish |  |  |  |  |  |
| Lemon |  |  |  |  |  |
| Seaweed |  |  |  |  |  |
| # Shared Traits |  |  |  |  |  |

Q- Is a banana more closely related to a lemon or an onion?

Q – What trait separates the banana from the radish?

**Mission 2**

## Eating dinosaurs for dinner

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | wishbone | 2 fingered hand | Shafted feathers | Toothless beak |
| Ostrich |  |  |  |  |
| Chicken |  |  |  |  |
| Archaeopteryx |  |  |  |  |
| Albertosaurus |  |  |  |  |
| T Rex |  |  |  |  |
| # Shared Traits |  |  |  |  |

Cladogram

After solving the puzzle, answer the question: Do birds have anything in common with dinosaurs?

Explain

## One small step

Cladogram

|  |  |  |  |
| --- | --- | --- | --- |
|  | Strong arm like bones | Eyes on top of head | Digits |
| Eusthenopteron |  |  |  |
| Acanthostega |  |  |  |
| Tulerpeton |  |  |  |
| Tiktaalik |  |  |  |
| # Shared Traits |  |  |  |

According to the tree you just built, what is the first trait that helped aquatic species evolve into creatures that live on land?

## Origin of whales

:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Underwater nursing | Carnivorous | Living in seawater | Tail Fluke | Loss of external hind leg |
| Hippo |  |  |  |  |  |
| Pakicetus |  |  |  |  |  |
| Ambulecetus |  |  |  |  |  |
| Dorudon |  |  |  |  |  |
| Blue Whale |  |  |  |  |  |
| Killer Whale |  |  |  |  |  |
| # Shared Traits |  |  |  |  |  |

Cladogram

Q - Which species does not have tail flukes?

Q - Which species is most related to the killer whale?

Q – What trait separate the hippo from the other animals on the cladogram?

Q – What factor could have led to the loss of external hind legs?